



In re ANINDYA CHAKRABORTY, Application No. 09/813,576
Amendment A

Amendments to the Specification:

BEFORE the paragraph beginning on page 7, line 8, please INSERT the following (thirteen) paragraphs:

One embodiment maintains a first database with a plurality of entries and a second database. The second database is bulk updated with the plurality of entries. A new transaction request is received, and the first database is updated with the new transaction request. The second database is transactional updated with the new transaction request before the bulk updating is complete.

In one embodiment, the first database is associated with an active device and the second database is associated with a standby device. In one embodiment, the bulk updating occurs only during a booting or reconciliation phase of the standby controller. In one embodiment, the bulk updating includes sending a plurality of bulk update messages from the active device to the standby device. In one embodiment, the transactional updating includes sending a transaction update message from the active device to the standby device.

In one embodiment, the plurality of entries are grouped into a plurality of groups, and an indication of whether the second database needs updating with a particular group of the plurality of groups is maintained. In one embodiment, the first database is associated with an active device and the second database is associated with a standby device, the bulk updating includes sending a plurality of bulk update messages from the active device to the standby device, and one of the plurality of bulk update messages includes a particular plurality of the plurality of entries belonging to a single one of the plurality of groups.

In one embodiment, the first database is associated with an active device and the second database is associated with a standby device, the bulk updating includes sending a plurality of bulk update messages from the active device to the standby device, and one of the plurality of bulk update messages includes entries from at least two of the plurality of groups. In one embodiment, the first database is associated with an active controller of a switching system, and the second database is associated with a standby controller of the switching system. In one embodiment, the bulk updating occurs only during a booting or reconciliation phase of the standby controller. One embodiment maintains an indication of whether the second database needs updating with a particular entry of the plurality of entries. One embodiment receives a first and second plurality of additional transaction requests after the bulk updating has commenced, updates the first database with the first and second plurality of additional transaction requests, bulk revises the second database with the first plurality of additional transaction requests, and transactional revises the second database with the second plurality of additional transaction requests. One embodiment includes a computer-readable medium containing computer-executable instructions for performing operations associated with synchronizing the first and second databases.

One embodiment maintains a plurality of groups of entries, and an indication of which of the groups of entries are subject to a bulk update technique. A new request is received. A determination is made as to whether a particular group of entries to which the new request belongs is subject to the bulk update technique, wherein at least one entry of the group of entries remains subject to the bulk update technique. A transactional update is initiated for the new request if the particular group of entries is not subject to the bulk update technique.

One embodiment initiates a bulk update of said at least one of the group of entries remaining subject to the bulk update technique. In one embodiment, initiating the bulk update and initiating the transactional update are performed by separate threads of one or more processes. In one embodiment, initiating the bulk update and initiating the transactional update are performed by separate hardware threads. In one embodiment, initiating the bulk update for the new request includes sending a bulk update message. In one embodiment, initiating the transactional update for the new request includes sending a transactional update message. One embodiment initiates a first bulk update including the new request if the particular group of entries is subject to the bulk update technique. One embodiment initiates a second bulk update for the particular group of entries prior to said receiving the new request. One embodiment receives a transaction acknowledgement message for the particular group of entries, and updates the indication for the particular group of entries to reflect that the particular group of entries is not subject to the bulk update technique.

One embodiment receives a transaction acknowledgement message for the particular group of entries and initiates a bulk update of the particular group of entries in response to receiving the transaction acknowledgement message and determining that at least one of the entries of the particular group of entries requires synchronization. One embodiment receives a second transaction acknowledgement message for the particular group of entries, and updates the indication for the particular group of entries to reflect that the particular group of entries is not subject to the bulk update technique in response to receiving the second transaction acknowledgement message and determining that no entries of the particular group of entries requires synchronization. In one embodiment, the transactional update includes sending a transactional update message from an active controller to a standby controller. One embodiment includes a computer-readable medium containing computer-executable instructions for performing operations.

One embodiment includes: an active database comprising a plurality of entries and an indication of which of the plurality of entries require bulk synchronization; an active controller bulk updater to compose a plurality of bulk update messages including a group of the plurality of entries indicated as requiring bulk synchronization; and an active controller transactional updater to compose a plurality of transactional update messages prior to the indication indicating that none of the plurality of entries requires bulk synchronization.

One embodiment includes: means for maintaining an active database comprising a plurality of entries and an indication of which of the plurality of entries require bulk synchronization; means for composing a plurality of bulk update messages including a group of the plurality of entries indicated as requiring bulk synchronization; and means for composing a plurality of transactional update messages prior to the indication indicating that none of the plurality of entries requires bulk synchronization.

One embodiment includes an active controller and a standby controller. The active controller includes an active database comprising a plurality of entries and an indication of which of the plurality of entries require bulk synchronization; an active controller bulk updater to compose a plurality of bulk update messages including a group of the plurality of entries indicated as requiring bulk synchronization; and an active controller transactional updater to compose a plurality of transactional update messages prior to the indication indicating that none of the plurality of entries requires bulk synchronization. The standby controller includes: a second database; a standby database updater to receive the plurality of bulk update messages from the active controller, to extract the group of the plurality of entries from the received bulk update messages, and to update the second database with the plurality of entries.

In one embodiment, the standby controller further includes a standby database transactional updater to receive the plurality of transactional update messages and to update the second database. In one embodiment, the standby database updater further receives the plurality of transactional update messages and updates the second database. In one embodiment, the active controller transactional updater further comprises a second plurality of transactional update messages after the indication indicating that none of the plurality of entries requires bulk synchronization.

One embodiment includes means for maintaining a first database; means for maintaining a second database; means for performing a bulk synchronization of the first and second databases; and means performing a transactional synchronization of the first and second databases prior to completion of the bulk synchronization of the first and second databases.

One embodiment includes means for maintaining a plurality of groups of entries; means for maintaining an indication of which of the groups of entries are subject to a bulk update technique; means for receiving a new request; means for determining whether a particular group of entries to which the new request belongs is subject to the bulk update technique, wherein at least one entry of the group of entries remains subject to the bulk update technique; and means for initiating a transactional update for the new request if the particular group of entries is not subject to the bulk update technique.